

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with strikethrough. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please **CANCEL claims 5-8 and 12-13** and **AMEND claims 3, 9 and 10** and **ADD new claims 15 and 16** in accordance with the following:

1. (previously presented): A polytrimethylene terephthalate resin comprising:

60 to 100 mole % of (a) trimethylene terephthalate recurring units, and

0 to 40 mole % of (b) at least one monomer unit selected from the group consisting of monomer units obtained from comonomers which are other than the monomers used for forming said trimethylene terephthalate recurring units and which are copolymerizable with at least one of the monomers used for forming said trimethylene terephthalate recurring units,

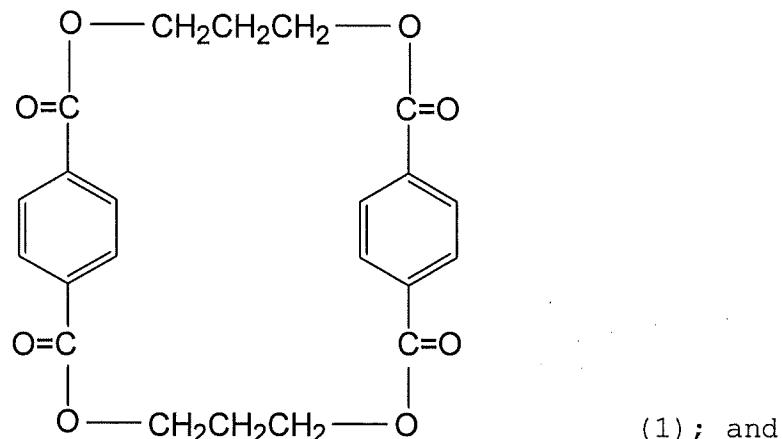
the total molar amount of (a) monomer units and (b) monomer units being 100 mole %,

said polytrimethylene terephthalate resin having the following characteristics (A) to (D):

(A) an intrinsic viscosity $[\eta]$ of from 0.74 to 4 dl/g;

(B) a molecular weight distribution of from 2 to 2.7 in terms of the M_w/M_n ratio, wherein M_w represents the weight average molecular weight of said polytrimethylene terephthalate resin and M_n represents the number average molecular weight of said polytrimethylene terephthalate resin;

(C) a cyclic dimer content of not greater than 1.5 % by weight, said cyclic dimer being represented by the following formula (1):



(D) a psychometric lightness L-value of from 70 to 100 and a psychometric chroma b^* -value of from -5 to 25.

2. (original): The polytrimethylene terephthalate resin according to claim 1, which is in the form of pellets, said pellets having a crystallinity (X_c) of 40 % or less,

wherein said crystallinity (X_c) is defined by the following formula (2):

$$X_c (\%) = \{\rho_c \times (\rho_s - \rho_a)\} / \{\rho_s \times (\rho_c - \rho_a)\} \times 100 \quad (2)$$

wherein ρ_a is 1.300 g/cm³ which is an amorphous density of trimethylene terephthalate homopolymer, ρ_c is 1.431 g/cm³ which is a crystal density of trimethylene terephthalate homopolymer, and ρ_s represents a density (g/cm³) of said pellets.

3. (Currently Amended): A method for producing the poly-trimethylene terephthalate resin of claim 1, which comprises:

(1) providing a crude trimethylene terephthalate resin in a molten form, said crude trimethylene terephthalate resin comprising:

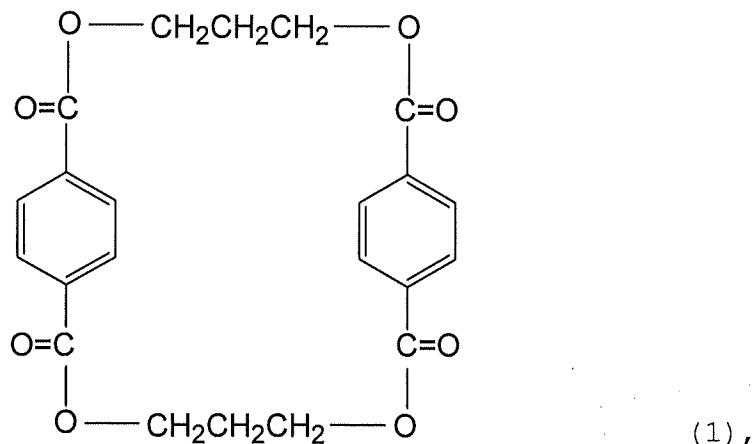
60 to 100 mole % of (a) trimethylene terephthalate recurring units, and

0 to 40 mole % of (b) at least one monomer unit selected from the group consisting of monomer units obtained from co-monomers which are other than the monomers used for forming said trimethylene terephthalate recurring units and which are

copolymerizable with at least one of the monomers used for forming said trimethylene terephthalate recurring units,

the total molar amount of (a) monomer units and (b) monomer units being 100 mole %,

said crude trimethylene terephthalate resin further comprising a cyclic dimer represented by the following formula (1):



said crude trimethylene terephthalate resin having an intrinsic viscosity $[\eta]$ of from ~~0.2 to 40.4~~ to 1.5 dl/g and a cyclic dimer formation index (E) of less than 0.066, said cyclic dimer formation index (E) being defined by the following formula (3):

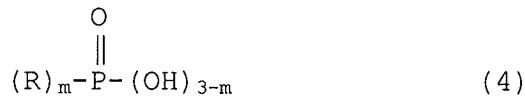
$$E = W/M \quad (3)$$

wherein M represents the terminal hydroxyl group content of said crude trimethylene terephthalate resin in terms of mole % based on the total molar amount of the trimethylene terephthalate unit, and W represents the re-formation rate of the cyclic dimer in terms of an increase (as expressed by absolute percentage value) in the cyclic dimer content (% by weight), per minute, of the crude trimethylene terephthalate resin as measured at 260 °C in nitrogen gas atmosphere with respect to a sample of the crude polytrimethylene terephthalate resin in a molten form, wherein the molten sample is obtained by melting a cyclic dimer-reduced sample of the crude polytrimethylene terephthalate resin which cyclic dimer-reduced sample has a cyclic dimer content reduced to 0.1 % by weight or less; and

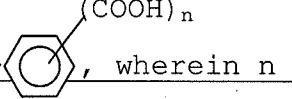
(2) removing, from said crude polytrimethylene terephthalate resin in a molten form, 0.5 % by weight or more, based on the weight of said crude polytrimethylene terephthalate resin, of said cyclic dimer, by volatilization under re-

duced pressure,

wherein said crude trimethylene terephthalate resin is produced by a polycondensation reaction performed in the presence of a catalyst selected from the group consisting of: a catalyst comprising at least one titanium compound and at least one phosphorus compound selected from the group consisting of phosphoric acid, phosphorous acid, a phosphorous ester and a phosphorus compound represented by the following formula (4):



wherein m is an integer of 1 or 2, and

each R independently represents , wherein n is an integer of from 0 to 3,

wherein said at least one titanium compound and said at least one phosphorus compound are used in respective amounts such that the phosphorus/titanium atomic ratio is in the range of from 0.01 to 10, and
a catalyst comprising at least one tin compound selected from the group consisting of metallic tin, tin oxide, tin sulfide, tin halide, tin carboxylate and tin

alkoxide, and
wherein the removal of said cyclic dimer is performed by
at least one method selected from the group consisting of a
method using a guide-wetting fall polymerizer and a method
using a thin film evaporator.

4. (original): The method according to claim 3, wherein said crude polytrimethylene terephthalate resin has a cyclic dimer formation index (E) of less than 0.033.

5-8. (Cancelled)

9. (Currently Amended): A method for producing the polytrimethylene terephthalate resin, which comprises:

(1) providing a crude trimethylene terephthalate resin in a molten form, said crude trimethylene terephthalate resin comprising:

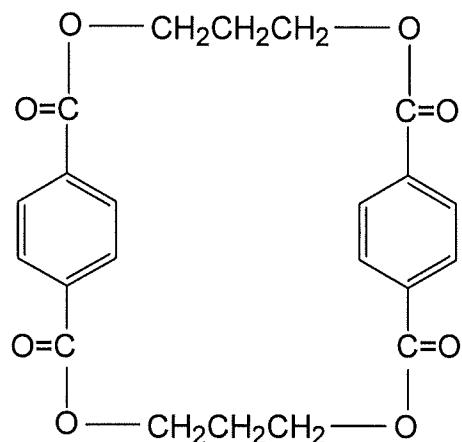
60 to 100 mole % of (a) trimethylene terephthalate recurring units, and

0 to 40 mole % of (b) at least one monomer unit selected from the group consisting of monomer units obtained from co-monomers which are other than the monomers used for forming said trimethylene terephthalate recurring units and which are

copolymerizable with at least one of the monomers used for forming said trimethylene terephthalate recurring units,

the total molar amount of (a) monomer units and (b) monomer units being 100 mole %,

said crude trimethylene terephthalate resin further comprising a cyclic dimer represented by the following formula (1):



(1),

said crude trimethylene terephthalate resin having an intrinsic viscosity $[\eta]$ of from ~~0.2 to 20.4~~ to 1.5 dl/g and a cyclic dimer formation index (E) of less than 0.066, said cyclic dimer formation index (E) being defined by the following formula (3):

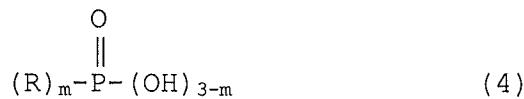
$$E = W/M \quad (3)$$

wherein M represents the terminal hydroxyl group content of said crude trimethylene terephthalate resin in terms of mole % based on the total molar amount of the trimethylene terephthalate unit, and W represents the re-formation rate of the cyclic dimer in terms of an increase (as expressed by absolute percentage value) in the cyclic dimer content (% by weight), per minute, of the crude trimethylene terephthalate resin as measured at 260 °C in nitrogen gas atmosphere with respect to a sample of the crude polytrimethylene terephthalate resin in a molten form, wherein the molten sample is obtained by melting a cyclic dimer-reduced sample of the crude polytrimethylene terephthalate resin which cyclic dimer-reduced sample has a cyclic dimer content reduced to 0.1 % by weight or less; and

(2) removing, from said crude polytrimethylene terephthalate resin in a molten form, 0.5 % by weight or more, based on the weight of said crude polytrimethylene terephthalate resin, of said cyclic dimer, by volatilization under re-

duced pressure to produce a cyclic dimer content of not greater than 2 % by weight,

wherein said crude trimethylene terephthalate resin is produced by a polycondensation reaction performed in the presence of a catalyst selected from the group consisting of:
a catalyst comprising at least one titanium compound and at least one phosphorus compound selected from the group consisting of phosphoric acid, phosphorous acid, a phosphorous ester and a phosphorus compound represented by the following formula (4):



wherein m is an integer of 1 or 2, and

each R independently represents  , wherein n is an integer of from 0 to 3,

wherein said at least one titanium compound and said at least one phosphorus compound are used in respective amounts such that the phosphorus/titanium atomic ratio is in the range of from 0.01 to 10, and

a catalyst comprising at least one tin compound selected from the group consisting of metallic tin, tin

oxide, tin sulfide, tin halide, tin carboxylate and tin alkoxide,

wherein the removal of said cyclic dimer is performed by a method comprising continuously feeding said crude trimethylene terephthalate resin in a molten form to a guide-wetting fall polymerizer having a perforated plate and at least one guide provided in association with the perforated plate, wherein said crude trimethylene terephthalate resin is allowed to fall along and in contact with the surface of said at least one guide provided in the polymerizer at a temperature which is equal to or higher than the crystalline melting point of said crude trimethylene terephthalate resin and is not higher than 290 °C under reduced pressure, so that polymerization of said crude trimethylene terephthalate resin and volatilization of said cyclic dimer are effected during the fall of said crude trimethylene terephthalate resin, while continuously withdrawing the resultant trimethylene terephthalate resin from said polymerizer, and

wherein said polytrimethylene terephthalate resin has the following characteristics (A) to (D):

- (A) an intrinsic viscosity $[\eta]$ of from 0.74 to 4 dl/g;
- (B) a molecular weight distribution of from 2 to 2.7 in terms of the M_w/M_n ratio, wherein M_w represents the weight

average molecular weight of said polytrimethylene terephthalate resin and Mn represents the number average molecular weight of said polytrimethylene terephthalate resin;

(C) a cyclic dimer content of not greater than 2 % by weight; and

(D) a psychometric lightness L-value of from 70 to 100 and a psychometric chroma b*-value of from -5 to 25.

10. (Currently Amended): A method for producing the polytrimethylene terephthalate resin, which comprises:

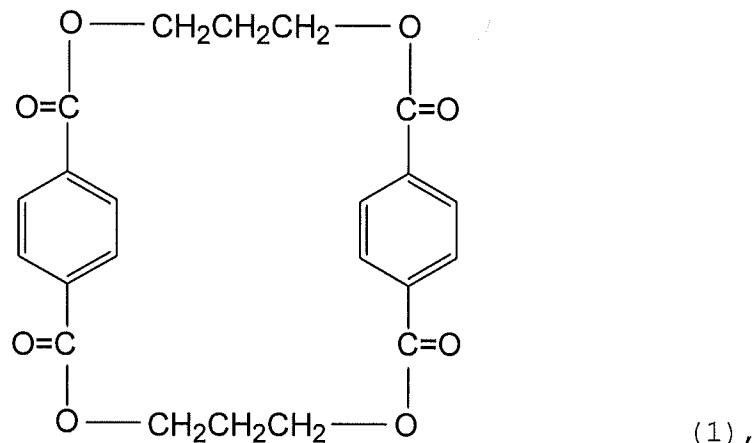
(1) providing a crude trimethylene terephthalate resin in a molten form, said crude trimethylene terephthalate resin comprising:

60 to 100 mole % of (a) trimethylene terephthalate recurring units, and

0 to 40 mole % of (b) at least one monomer unit selected from the group consisting of monomer units obtained from co-monomers which are other than the monomers used for forming said trimethylene terephthalate recurring units and which are copolymerizable with at least one of the monomers used for forming said trimethylene terephthalate recurring units,

the total molar amount of (a) monomer units and (b) monomer units being 100 mole %,

said crude trimethylene terephthalate resin further comprising a cyclic dimer represented by the following formula (1):



said crude trimethylene terephthalate resin having an intrinsic viscosity $[\eta]$ of from ~~0.6 to 40.4~~ to 1.5 dl/g and a cyclic dimer formation index (E) of less than 0.066, said cyclic dimer formation index (E) being defined by the following formula (3):

$$E = W/M \quad (3)$$

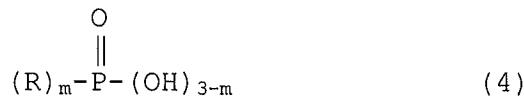
wherein M represents the terminal hydroxyl group content of said crude trimethylene terephthalate resin in terms of mole % based on the total molar

amount of the trimethylene terephthalate unit, and W represents the re-formation rate of the cyclic dimer in terms of an increase (as expressed by absolute percentage value) in the cyclic dimer content (% by weight), per minute, of the crude trimethylene terephthalate resin as measured at 260 °C in nitrogen gas atmosphere with respect to a sample of the crude polytrimethylene terephthalate resin in a molten form, wherein the molten sample is obtained by melting a cyclic dimer-reduced sample of the crude polytrimethylene terephthalate resin which cyclic dimer-reduced sample has a cyclic dimer content reduced to 0.1 % by weight or less; and

(2) removing, from said crude polytrimethylene terephthalate resin in a molten form, 0.5 % by weight or more, based on the weight of said crude polytrimethylene terephthalate resin, of said cyclic dimer, by volatilization under reduced pressure to produce a cyclic dimer content of not greater than 2 % by weight,

wherein said crude trimethylene terephthalate resin is produced by a polycondensation reaction performed in the presence of a catalyst selected from the group consisting of:

a catalyst comprising at least one titanium compound
and at least one phosphorus compound selected from the
group consisting of phosphoric acid, phosphorous acid, a
phosphorous ester and a phosphorus compound represented
by the following formula (4):



wherein m is an integer of 1 or 2, and

each R independently represents  , wherein n
is an integer of from 0 to 3,

wherein said at least one titanium compound and
said at least one phosphorus compound are used in
respective amounts such that the phospho-
rus/titanium atomic ratio is in the range of from
0.01 to 10, and

a catalyst comprising at least one tin compound se-
lected from the group consisting of metallic tin, tin
oxide, tin sulfide, tin halide, tin carboxylate and tin
alkoxide,

wherein the removal of said cyclic dimer is performed by
means of a thin film evaporator under conditions wherein:

(a) the pressure in said thin film evaporator is a re-

duced pressure of 2.6 kPa or less,

(b) a thin film of the crude polytrimethylene terephthalate resin in a molten form is formed on the inner wall of said thin film evaporator, while performing the surface renewal of said crude polytrimethylene terephthalate resin,

(c) said thin film of the crude polytrimethylene terephthalate resin in a molten form has a resin-gas contact area of 1 cm²/g or more, in terms of a value calculated by dividing the area of said crude polytrimethylene terephthalate resin which is in contact with the gaseous phase inside the thin film evaporator by the weight of the crude polytrimethylene terephthalate resin present in said thin film evaporator, and

(d) said crude polytrimethylene terephthalate resin occupies not more than 40 % of the inner space of said thin film evaporator, and

wherein said polytrimethylene terephthalate resin has the following characteristics (A) to (D):

(A) an intrinsic viscosity $[\eta]$ of from 0.74 to 4 dl/g;
(B) a molecular weight distribution of from 2 to 2.7 in terms of the Mw/Mn ratio, wherein Mw represents the weight average molecular weight of said polytrimethylene terephthalate resin and Mn represents the number average molecular

weight of said polytrimethylene terephthalate resin;

(C) a cyclic dimer content of not greater than 2 % by weight; and

(D) a psychometric lightness L-value of from 70 to 100 and a psychometric chroma b*-value of from -5 to 25.

11. (previously presented): The method according to claim 9 or 10, wherein said crude polytrimethylene terephthalate resin has a cyclic dimer formation index (E) of less than 0.033.

12-13. (Cancelled)

14. (previously presented): The method according to claim 9 or 10, wherein said polytrimethylene terephthalate resin has a cyclic dimer content of not greater than 1.5 % by weight.

15. (New): The method according to any one of claims 3, 9 and 10, wherein said phosphorus compound represented by the formula (4) is at least one compound selected from the group consisting of phenylphosphonic acid and 2,5-dicarboxyphenylphosphonic acid.

16. (New) : The method according to any one of claims 3, 9 and 10, wherein said tin carboxylate is at least one compound selected from the group consisting of tin butyrate and tin 2-ethylhexanoate.